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A NEW SUBSPECIES OF HORSESHOE BAT
(*HIPPOSIDEROS DIADEMA*)
FROM THE SOLOMON ISLANDS

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In Hill's (1963: 109-111) revision of the genus *Hipposideros* he recognized 16 subspecies of *H. diadema* (É. Geoffroy). This species occurs from the Asiatic mainland southeastward into the Solomon Island group. Five subspecies of *H. diadema* are known from the immediate region of the Solomon Islands: two from islands in the Solomon group; one from Manus Island (Admiralty Islands) northwest of the Solomons; one from Kiriwina Island (Trobriand Islands) and one from New Guinea, both west of the Solomons (Fig. 1).

In 1964, four specimens of an unnamed subspecies were collected at Dala on Malaita Island by members of an expedition from the Bernice P. Bishop Museum. All four were preserved in 70 percent alcohol for about a year. Then the crania were extracted and cleaned and the skins of two were prepared as dried study specimens. These bats are slightly smaller than *Hipposideros diadema oceanitis* Andersen (1905), known from Choiseul, Guadalcanal, Vella Lavella, Fauro, Santa Ysabel, and Bougainville islands in the Solomons, but slightly larger than *Hipposideros diadema demissus* Andersen (1909), known from San Christobal Island in the Solomons (see Laurie and Hill, 1954: 57-58; Hill, 1963: 100-111), and may be named and described as follows:

***Hipposideros diadema malaitensis* new subspecies**

Holotype. Adult female, skin and skull, in good condition (originally stored in alcohol for about one year), no. BBM-BSIP 24121, Bernice P. Bishop Museum; from Dala (lat. 8°30'S, long. 160°42'E), Malaita Island, British Solomon Islands Protectorate; obtained on 4 July 1964 by Peter Shanahan, original no. 300.

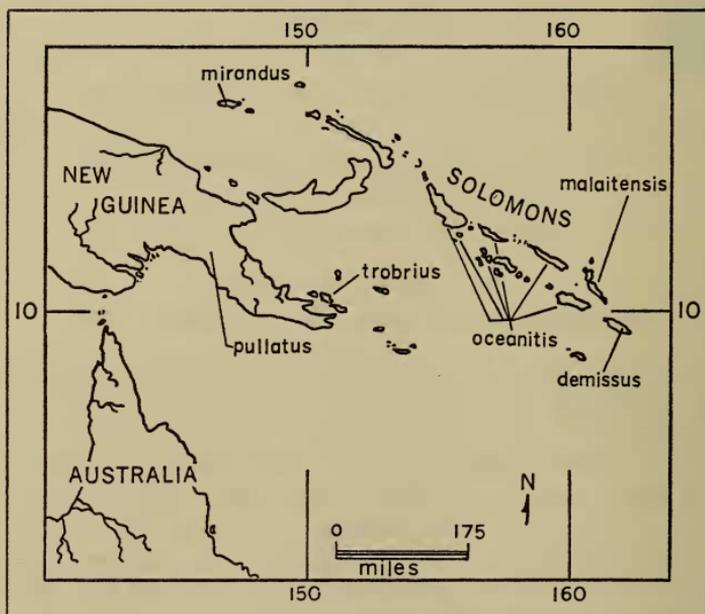


FIG. 1. Distribution of six subspecies of *Hipposideros diadema*.

Distribution: Known only from the type-locality.

Diagnosis: Size about average for species; wing membranes and interfemoral membrane (naked) dark brown in dried specimens; underside of forearm sparsely set with pale hairs; upper surface of forearm bare; hair soft (10 mm on neck, 15 mm on back), tipped with Mummy Brown (capitalized color terms after Ridgway, 1912) and/or Ochraceous-Buff on back; obscure stripe of Light Buff along sides immediately above attachment of wing membrane; hair of crown and face Light Buff tipped with Prout's Brown; shoulders Ochraceous-Buff, Light Buff tips imparting slightly frosted appearance; hair on throat sparse (10 mm), Cinnamon-Brown; hair on chest (14 mm) and lower abdomen (6–10 mm) dense and soft, Cinnamon-Brown or Prout's Brown, paler tips imparting slightly frosted appearance; braincase narrow; jugal process on zygomatic arch prominent; mandible massive; angular process flexed outward (laterally) about 30 degrees.

Comparisons: From five adult *Hipposideros diadema oceanitis* Andersen (1905) from Choiseul Island, *malaitensis* differs as follows: smaller in all external dimensions (forearm averaging 73.5 as opposed to 78.0 mm); slightly smaller in most cranial measurements; breadth of braincase 11.7 as opposed to 12.5 mm; length of mandibular tooth-row

12.7 as opposed to 13.2 mm; paler upper parts; darker underparts; fainter lateral stripe.

From *Hipposideros diadema demissus* Andersen (1909), *malaitensis* differs as follows: larger in all external dimensions (forearm averaging 73.5 as opposed to 67.0 mm); cranium larger, especially zygomatic breadth (17.0 as opposed to 15.0 mm) and length of maxillary tooth-row and mandibular tooth-row (11.1 as opposed to 10.2 mm, and 12.5 as opposed to 11.4 mm, respectively); paler underparts; fainter lateral stripe. (I am indebted to John E. Hill for measurements of the holotype of *demissus*.)

From *Hipposideros diadema trobrius* Troughton (1937), known from Kiriwina Island of the Trobriand Island group (Fig. 1), *malaitensis* differs as follows: tibia longer (averaging 32.5 as opposed to 29.0 mm); third metacarpal shorter (53.1 as opposed to 60.0 mm); braincase narrower (11.6 as opposed to 12.5 mm); mandibular tooth-row shorter (12.5 as opposed to 13.2 mm). (Measurements of *H. d. trobrius* are from Troughton, 1937.)

From *Hipposideros diadema pullatus* Andersen (1905) of New Guinea (Fig. 1), *malaitensis* differs as follows: smaller throughout (forearm averaging 73.5 as opposed to 75 to 82 mm). (Measurements of *H. d. pullatus* are from Hill, 1963: 112.)

From *Hipposideros diadema mirandus* Thomas (1914) of the Admiralty Islands (Fig. 1), *malaitensis* differs as follows: larger throughout (forearm averaging 73.5 as opposed to 68.0 mm). (Measurements of *H. d. mirandus* are from Hill, 1963: 112.)

Measurements: Comparative measurements of three subspecies are given in Table 1. Some measurements of the holotype (in mm) are as follows: length of head and body, 78; tail vertebrae, 50; hind foot (including claws), 16; ear, 25; length of forearm, 72.5; length of tibia, 32.1; length of third metacarpal, 52.9; greatest length of skull, 29.8; zygomatic breadth, 16.7; breadth of braincase, 12; length of maxillary tooth-row, 11; length of mandibular tooth-row, 12.4.

Remarks: Tate (1941: 373-374) divided the numerous subspecies of *Hipposideros diadema* into two general "groups" according to length of forearm: 80 to 90 mm (southeastern Asia, Borneo, and Java), and 63 to 79 mm (Philippines, Celebes, New Guinea, Australia, Solomon Islands, and some other small adjacent islands). Hill (1963: 108) pointed out that there is no actual west-east cline, even though the larger subspecies occur to the west and the smaller subspecies to the east.

The three subspecies in the Solomon Islands can be distinguished and identified on basis of size, and in themselves form a northwest to southeast cline. As can be seen in Fig. 1, Malaita Island, where *malaitensis* occurs, lies between islands on which the other two subspecies, *oceanitis* and *demissus*, occur. Since *malaitensis* is intermediate in size (Fig. 2), it may be the product of interbreeding between pop-

TABLE 1. Comparative measurements (means and extremes, in mm) of three subspecies of *Hipposideros diadema*. Measurements of the topotype of *H. diadema demissus* are from Tate (1941).

	<i>oceanitis</i> , 5 ¹	<i>malaitensis</i> , 4 ¹	<i>demissus</i> , 2 ¹
Head and body	88.4 (85-93)	83.7 (78-90)	— —
Tail vertebrae	50.8 (50-52)	49.7 (48-51)	— —
Hind foot (<i>c.u.</i>)	16.9 (16-18)	16.0 (15-17)	— —
Ear	29.4 (29-30)	26.6 (25.0-28.4)	— —
Forearm	78.0 (77.0-78.6)	73.5 (71.4-76.2)	65.2, 68.5
Tibia	34.9 (33.3-36.5)	32.5 (32.1-33.4)	25.5, 28.5
2nd metacarpal	60.8 (58.9-61.7)	54.8 (54.2-55.7)	— —
3rd metacarpal	57.6 (56.3-59.0)	53.1 (52.7-54.1)	47.8, 50.5
4th metacarpal	56.1 (55.2-57.3)	51.7 (51.3-52.2)	46.8, 48.5
5th metacarpal	52.1 (49.5-53.5)	48.4 (47.4-49.2)	44.6, 46.5
Greatest length of skull	31.0 (30.0-31.9)	29.9 (28.9-31.1)	— —
Condylocanine length	27.6 (27.1-28.1)	26.7 (26.2-27.8)	— —
Zygomatic breadth	17.4 (17.1-17.8)	17.0 (16.7-17.3)	14.7, 15.5
Breadth of braincase	12.5 (12.0-12.9)	11.6 (11.4-12.0)	— —
Maxillary tooth-row	11.5 (11.5-11.6)	11.1 (11.0-11.4)	10.2, 10.2
Mandibular tooth-row	13.1 (13.0-13.3)	12.5 (12.4-12.9)	11.1, 11.7
Length of mandible	21.3 (21.0-21.5)	20.1 (19.6-20.8)	18.1, 19.5
Width across upper C	8.2 (7.9-8.4)	7.9 (7.8-8.1)	6.7, —
Width across upper M2	10.7 (10.6-10.9)	10.5 (10.5-10.7)	— —

¹ Numeral denotes number of individuals for which measurements were available.

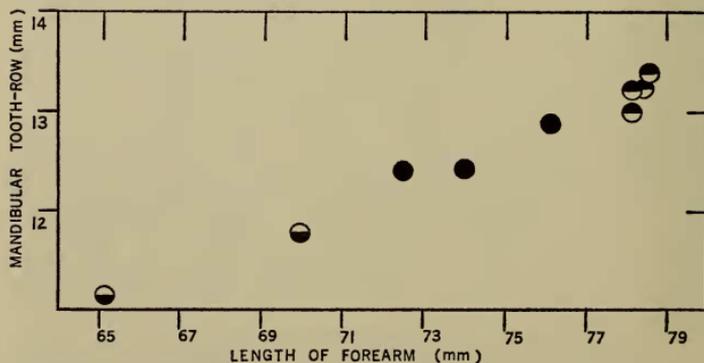


FIG. 2. Comparison of *Hipposideros diadema demissus* (lower half of circle solid), *H. d. malaitensis* (solid circle), and *H. d. oceanitis* (upper half of circle solid). Measurements of *H. d. demissus* are from Hill (1963) and Tate (1941).

ulations of *oceanitis* and *demissus*. Whether or not such is the case, there is little overlap in any external or cranial dimensions between any two of the three subspecies.

Specimens examined: Four adults from the type-locality, two females (BSIP 24121, holotype, and BSIP 24126) and two males (BSIP 24122-3). All specimens are deposited in the Bernice P. Bishop Museum. The prefix "BSIP" is part of the catalogue number and refers to the Solomon Islands.

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